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ABSTRACT

The purpose of this project was to inquire into the current status of development, past use, availability, and future planning of intelligence tests for the visually handicapped in relation to the fields of psychological, educational, and vocational counseling. The project procedure was that of a research utilization conference involving the authors of the tests, clinical examiners who use the tests, and representatives of agencies and professional groups who require the information provided through the tests. This report summarizes the data available on the tests as compiled at the conference. Test identification information is supplied in Appendix B to the report. The tests cited are: Test Battery for Use with the Blind (Vocational Intelligence Scale for the Blind/Series, VISAB), The Tactual Reconstruction (VISAB Battery); The Vocational Intelligence Scale for the Adult Blind (VISAB); The Personal History Survey, Form W (VISAB Battery); The Diagnostic Interview (VISAB Battery); The Sentence Completion Test (VISAB Battery); The Sound Test, An Auditory Projective Technique (VISAB Battery); A Haptic Intelligence Scale for Adult Blind; Stanford-Kohs Block Design Test for the Blind; and Raven Progressive Matrices for Presentation to the Blind (Tactual Progressive Matrices). (Author/DB)

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THE DEVELOPMENT AND [illegible] OF INTELLIGENCE [illegible]
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FINAL REPORT

SOCIAL AND REHABILITATION SERVICE

RESEARCH GRANT 22-P-55152/4-01

THE DEVELOPMENT AND APPLICATION OF INTELLIGENCE TESTS FOR THE BLIND: A RESEARCH UTILIZATION CONFERENCE

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August, 1972

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ABSTRACT

Since the late 1950's the Social and Rehabilitation Service of the Department of Health, Education and Welfare has provided encouragement and support for research and clinical scientists seeking to develop intelligence tests for use with visually handicapped youth and adults.

The purpose of this project was to inquire into the current status of development, past use, availability, and future planning for these tests in relation to the fields of psychological, educational and vocational counseling.

The project procedure was that of a research utilization conference involving the authors of the tests, clinical examiners who use the tests, and representatives of agencies and professional groups who require the information provided through the tests.

The product of this conference was threefold.

1. This report and its dissemination which summarizes the data available on the tests as brought together at the research utilization conference.
2. The production of a motion picture film and a sound synchronized slide presentation depicting the characteristics of the tests for subsequent dissemination.
3. A follow-up conference with the research staff of the American Printing House for the Blind to approach resolution of specific utilization problems: test production, modification, validation and dissemination.

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INTRODUCTION

Realizing the importance of research utilization and concerned with the continuing development of proper avenues for augmenting professional awareness and long-term use of materials, procedures, and data developed and acquired in the process of experimentation supported and encouraged by federal agencies, the Social and Rehabilitation Service has appropriately provided support for this project which was an inquiry into the current status of intelligence tests for the visually handicapped.

In general this is a report on the current status of utilization of such tests, the problems encumbering utilization of the tests, and the development of plans to enhance test utilization.

The procedure employed was to convene authorities from a variety of areas of professional competence who could elaborate--based on their professional knowledge and personal experiences--on the above problems and to conclude the conference with recommendations of a practical nature which might set into motion further immediate activities by the project staff and long term professional projects for enhancing the development and application of intelligence tests for the visually handicapped. The tests primarily considered at this conference were those developed with SRS support (Figure I).

FIGURE I

Blindness Rehabilitation Test Kits, Intelligence and Aptitude Measurement Scales

Project	Report (or) Project Title, Project Director, Grantee
RD-282(58-3)*	A HAPTIC INTELLIGENCE SCALE FOR ADULT BLIND, final report. Harriett C. Shurrager, Illinois Institute of Technology
RD-670(61-3)*	RAVEN PROGRESSIVE MATRICES FOR PRESENTATION TO THE BLIND, final report. Robert P. Anderson, Texas Technological College
RD-1094(63-2)*	TEST BATTERY FOR USE WITH THE BLIND (6-part test kit with manuals): The Vocational Intelligence Scale for the Adult Blind, et. al. Robert J. Teare, University of Wichita
RD-1412(64-1)*	MANUAL FOR THE HAPTIC INTELLIGENCE SCALE FOR ADULT BLIND, with test kit. Harriett C. Shurrager, Philip S. Shurrager, Illinois Institute of Technology
RD-1625(65-3)*	STANFORD-OHWAKI-KOHS TACTILE BLOCK DESIGN INTELLIGENCE TEST FOR THE BLIND, with final report, manuals, test kit. William L. Dauterman and Richard M. Suinn, Stanford University

CONFERENCE FORMAT AND AGENDA

Conference Participants

The list of approximately 20 participants in this conference (Appendix A) includes personnel with a variety of professional interests in the problem.

Authors of the tests or research scientists who have developed tests were invited as one group of participants. It was believed that they could most appropriately fully inform the participants about the nature of the tests, problems in test development and problems encountered in encouraging utilization.

Professional psychological examiners who frequently engage in the utilization of intelligence tests with the visually handicapped were invited to the conference on the assumption that they would contribute most effectively to the identification of problems within tests, between tests, within the test population, and testing objectives which need clarification in order to make maximal use of currently available tests and to clarify those test areas which were not fully covered within the available batteries.

Representatives were invited from a number of rehabilitation and educational agencies who customarily first receive, interpret and apply these intelligence appraisals in order to plan a direct program for the individual client. This group of conference participants was included on the assumption that important information could be obtained as discussion revealed how well test results conform to the needs of counselors, teachers and therapists working with the individual clients over a long term.

Some conference participants were invited because of their involvement in the preparation at the college level of counselors, psychologists, teachers, and other professionals working with the visually handicapped in order to determine from them the extent to which these tests were part of their training program and the ways students are being made aware of the tests and their use in rehabilitation and education.

A group of participants were invited because of their knowledge of test construction and their general interest and competence in the area of assessing the adequacy of statistical and procedural details involved in the construction of the tests and who might offer suggestions as to how the tests could be improved in this respect if necessary.

And finally participants were selected so as to include representatives of the major professional organizations in service to the visually handicapped.

Participants encompassed varying degrees of visual ability themselves.

Conference Format

Because of the background experience and expert knowledge of the small group of conference participants the meetings were conducted in a discussion style based on brief opening remarks by the discussion leader for each topic. It was presumed and proved to be correct that the group of conference participants was widely knowledgeable in the matters under discussion and attended the conference with a sincere desire to move ahead rapidly to issues which were in many instances clearly formulated from their own work experiences.

Figure II shows the conference agenda.

FIGURE II

Conference Schedule

Research Utilization Conference: Intelligence Tests for the Blind
Sponsored By:
Rehabilitation Services Administration
and
The University of Georgia
The White House Motor Inn
Atlanta, Georgia
December 7, 8, 9, 1970

Monday Afternoon

1. Topic: Welcome, Agenda and Organizational Details of the Conference

   Dr. W. Scott Curtis
   University of Georgia
   Athens, Georgia

2. Topic: The Role of Federal Agencies in Test Development for the Blind

   Dr. Douglas C. MacFarland
   Rehabilitation Services Administration
   Washington, D.C.

3. Topic: The Role of SRS in Research Utilization

   Dr. Deno Reed
   Rehabilitation Services Administration
   Washington, D.C.

4. Topic: The Objectives of Psychological Testing for the Blind

   Discussion Leader: Mrs. Mary K. Bauman
   Personnel Research Center
   Philadelphia, Pennsylvania

5. Topic: The Objectives of Intelligence Testing for the Blind

   Discussion Leader: Dr. Carl Davis
   Perkins School for the Blind
   Watertown, Massachusetts

FIGURE II (continued)

Tuesday Morning

1. Topic: Recently Developed Intelligence Tests for the Blind

   Discussion Leaders: Dr. Harriet Shurrager
   Illinois Institute of Technology
   Chicago, Illinois

   Dr. Philip Shurrager
   Illinois Institute of Technology
   Chicago, Illinois

   Dr. Robert P. Anderson
   Texas Technical College
   Lubbock, Texas

   Dr. Robert J. Teare
   University of Georgia
   Athens, Georgia

   Dr. William L. Dauterman
   198 Wagner Drive
   Claremont, California

Tuesday Afternoon

1. Topic: Demonstration Testing with Intelligence Tests for the Blind on Video Tape

   Discussion Leader: Dr. Edward Donlon
   Syracuse University
   Syracuse, New York

2. Topic: Research and Statistical Design of the Tests for the Blind

   Discussion Leader: Dr. John Pelosi
   Child Advocacy Center
   Durham, North Carolina

3. Topic: Clinical Evidences for Validity, Reliability and Applicability of Intelligence Tests Developed Specifically for the Blind

   Discussion Leader: Dr. Marie Skodak Crissey
   Consulting Psychologist
   Swartz Creek, Michigan

4. Topic: Clinical Evidence for Validity, Reliability and Applicability of Intelligence Tests Developed for the Sighted when applied to the Blind

   Discussion Leader: Dr. Murray Tillman
   University of Georgia
   Athens, Georgia

FIGURE II (continued)

Wednesday Morning

1. Topic: Problems for Future Research in Intelligence Testing with the Blind

   Discussion Leader: Dr. William Meyers
   University of Texas
   Austin, Texas

2. Topic: Dissemination Techniques for Enhancement of Test Utilization in Clinical, Academic, and Research Settings

   Discussion Leader: Dr. Edward Donlon
   Syracuse University
   Syracuse, New York

3. Topic: Summary and Discussion of Tentative Future Plans for Dissemination, Utilization and Follow-up Study

   Discussion Leader: Dr. Scott Curtis
   University of Georgia
   Athens, Georgia

Conference Issues

The conference participants were asked to react to each of the questions presented as issues (Figure III) under each discussion topic.

The formulation of conference issues prior to a conference is of course a very tentative matter. As in the case of this meeting some anticipated objectives were quickly dropped when it became clear that production, not dissemination was a key issue.

When it became clear that the tests were not and could not become widely available without further support for research and development, many of the pre-conference issues were modified and the focus of the conference changed as is reflected in this report and post conference activities.

FIGURE III

Issues and Questions for Consideration Throughout the Conference on:
Intelligence Tests for the Blind

1. Are currently available tests duplicative in function?

2. Do current tests overlook testing needs and problems?

3. Are clinics systematically informed about the availability and function and values of tests?

4. Are personnel informed about these tests?

5. What are the approaches used to inform agencies and personnel about available tests in this area?

   a. the Social and Rehabilitation Services Administration
   b. regional and state agencies
   c. personal efforts of the authors and test constructors

6. What bibliographies are available on this area?

7. What are the roles of professional associations such as APA, AAEVH, AAMD, CEC, AAWB, etc. in the regular or irregular provision of panels, short courses and speech included in their regular and official programs for the dissemination of information about newly constructed tests?

8. What are the known available films, videotapes, and other media techniques which have been brought to bare on this problem of test dissemination?

9. What is the availability of specific courses in psychological assessment of the blind and visually handicapped, and/or specific course work in the field of intelligence testing and appraisal for the blind and/or specific course work in the intellectual assessment of the handicapped which are provided by university as a standard part of their training program in various fields such as psychology, education of the blind and visually handicapped, vocational rehabilitation, and education of exceptional children?

10. Are there inherent problems in the tests themselves which reduce utilization?

11. What are the factors that determine utilization?

    a. the nature of the population
    b. the nature of the tests
    c. efforts of the authors
    d. efforts of SRS
    e. efforts of professional organizations
    f. efforts of test publishers
    g. nature of clinics
    h. nature of training programs

12. What should be the position of this conference on this issue or topic under discussion?

The Tests

One purpose of the Utilization Conference and this report is to provide a wide knowledge of the nature of the tests in their current form. The following brief summary (Figures IV - VIII) briefly identifies each test's important aspects.

The tests are characterized more fully in Appendix B. Both summaries were given to conference participants who also saw the test kits displayed.

Further, at the conference, a brief video tape sample was shown of all segments of each test being administered. This tape served as the basis for a film subsequently prepared and made available as a part of this project.

FIGURE IV

A Haptic Intelligence Scale for Adult Blind

AUTHOR: Harriet C. Shurrager
Department of Psychology and Education
Illinois Institute of Technology
Chicago, Illinois

RESEARCH SUPPORT: SRS RD-282 and RD-1412

COMPLETION DATE: June, 1964

TEST MATERIALS:

1. DIGIT SYMBOL - Plastic plate embossed with geometric forms; one to six raised dots (not braille) superimposed on each
   Task: Identify 40 shapes by appropriate number, referring to key shapes
   Administration Time: 2 minutes

2. OBJECT ASSEMBLY - block, doll, hand and ball - each dissected into several pieces
   Task: Assemble objects
   Administration Time: 2 minutes

3. BLOCK DESIGN - 4 cubes with rough/smooth surfaces
   9 example squares of some material
   Task: Arrange blocks to form patterns identical to sample plates
   Administration Time: 21 minutes

4. OBJECT COMPLETION - 16 objects from which one part is missing (e.g., comb with a missing tooth)
   Task: Identify missing part
   Administration Time: 14 minutes

5. PATTERN BOARD - Pegboard with 25 holes, fixed peg in center
   Task: Examine peg pattern, reproduce the pattern after it is withdrawn
   Administration Time: 18 minutes

6. BEAD ARITHMETIC - Abacus with wooden beads
   Task: Read abacus numbers, make numbers, add numbers (14 items)
   Administration Time: 15 minutes

ADMINISTRATION TIME: Can run 2 hours, but in practice, this rarely happens

POPULATION FOR STANDARDIZATION: Number: 700 Sex: M - 350
F - 350
Age: 16-64
Vision: Not exceeding 5/200 central vision acuity in the better eye with proper correction

VALIDITY: Reference Test: WAIS Verbal
Statistical Data: N = 399, correlation = .65 (age 20-34)

RELIABILITY: Odd - even = .95
Test - retest = .91

FIGURE V

Raven Progressive Matrices for Presentation to the Blind
(Tactual Progressive Matrices, TPM)

AUTHOR: Robert P. Anderson
Department of Psychology
Texas Tech University
Lubbock, Texas 79410

RESEARCH SUPPORT: SRS RD-670

COMPLETION DATE: January 31, 1964

TEST MATERIALS: 50 items - raised tactual designs on heavy illustration board

TASK: To select correct pattern piece for completing the progress of the pattern in the matrix

ADMINISTRATION TIME: Range, 15-105 minutes - mean time, 40 minutes

POPULATION FOR (SAMPLE) STANDARDIZATION:
Number: 122
Age: Male-M = 39 yrs. 9 mos.
Females-M = 26 yrs. 2 mos.
Sex: Males - 79
Females - 43
Vision: Poorer than 5/200 by Snellen index or equivalent of 99% loss of full visual acuity
Occupation Range: Lawyers to unskilled workers

VALIDITY:
1. Reference Test: WAIS
2. Statistical Data: N = 80
with V Scale Score, r = .49
with V IQ Score, r = .49
All correlations significant beyond .01 level

RELIABILITY: Split Half corrected by Spearman-Brown = .95
Kuder-Richardson = .93

FIGURE VI

Stanford-Kohs Block Design Test for the Blind

AUTHORS: William L. Dauterman
Director Rehabilitative Counseling Services
CasaColina Hospital for Rehabilitative Medicine
255 E Bonita Avenue
Pomona, California

and

Richard M. Suinn

RESEARCH SUPPORT: SRS RD-1625

COMPLETION DATE: August, 1966

TEST MATERIALS: 20 test designs assembled in booklet
16 blocks of rough/smooth surfaces corresponding to colors and textures of booklet designs

TASK: To reproduce booklet test design with blocks

ADMINISTRATION TIME: Limits vary for Partially Sighted and Functionally Blind. Testing discontinued after any two consecutive failures.

POPULATION FOR STANDARDIZATION: Number: 425
Age: Mean - 39
Sex: Not listed
Vision: Legally blind for minimum of one year (AMA Definition) Partially Sighted - 208, Functionally Blind - 217

VALIDITY: Reference Test: WAIS
Statistical Data: N = 425, correlation: r = .24, p .001 level

RELIABILITY: Test - Retest--N = 50, r = .86

FIGURE VII

The Tactual Reconstruction Pegboard (TRP)
from Test Battery for Use with the Blind

AUTHOR: Alin Gruber
Dunlap and Associates
Darien, Connecticut

RESEARCH SUPPORT: SRS RD-1094

COMPLETION DATE: August, 1959

TEST MATERIALS: Carrying case with pegboard in one half aluminum pegs and receptacle for storage in the other

TASK: A. Rate of Placement
Transfer of pegs one at a time from receptacle to pegboard as quickly as possible
B. Reconstruction Task - Two Practice Items, six test items - Subject forms peg pattern on one half of the board to match examiner's pattern on the other half

ADMINISTRATION TIME: Rate of Placement - 1 1/2 minutes
Reconstruction - Maximum time in minutes per item
5, 6, 10, 7, 6, 10
Both scores can usually be obtained in 30 minutes

POPULATION FOR STANDARDIZATION: Number: 640
Age: 20-50
Sex: Male - 447
Female - 193
Vision: Legally blind (80-100 percent loss in better eye)

CONSTRUCT VALIDITY: 1. Reference Test - WAIS verbal
2. Statistical Data: Reconstruction task intercorrelations were .38, .48 and .62 in High, Mid and Low vision groups.
Rate intercorrelations were .14, .33 and .40

CONCURRENT VALIDITY: 1. Reference - Employment location categories
2. Test did not differentiate strongly among employment groups

RELIABILITY: By Hoyt's analysis of variance method $r = .93$, $N = 318$
Intercorrelations with WAIS - for Reconstruction $r = .39$
for Rate $r = .25$

FIGURE VIII

Vocational Intelligence Scale for the Adult Blind
(VISAB)

AUTHOR: Walter R. Jones

RESEARCH SUPPORT: SRS RD-1094

COMPLETION DATE: August, 1959

TEST MATERIALS: 13 plastic panels in carrying case
13 practice and 43 test items consisting of 4 raised geometric forms

TASK: Discover visually or tactually which of the 4 alternatives does not fit the pattern

ADMINISTRATION TIME: No time limit; average time, 40 minutes

POPULATION FOR STANDARDIZATION: Number: 640
Age: 20-50
Sex: Male - 447
Female - 193
Vision: Legally blind (80-100% loss in better eye)

VALIDITY: Reference Test: WAIS
Statistical Data: N = 537, product-moment correlation = .63(p .01)

RELIABILITY: Observed reliability .91 obtained by Horst's modification of Kinder-Richardson formula 20

Conference Results

Early in the conference it became clear that certain issues which might orginarily seem mundane, were critical components of the problems encumbering test utilization. Usually the conference would proceed immediately to such issues as validity, reliability, test construction, etc. However, the following problems directed our attention to more practical matters, e.g.:

1. The tests are not available in sufficient quantities for full scale research or clinical use.
2. The prospect of extensive production of the tests is limited due to problems of production technology, cost, and coordinated administrative effort.
3. The exact set of professionals administering intelligence tests to the visually handicapped is not clearly identified for easy access, training and data collection.
4. The feasibility of data collection in a service setting under present conditions seemed economically prohibitive.
5. General professional familiarity with all the tests was agreed to be below our expectations.

In the process of bringing these problems to light, the conference participants expressed some general problems relating to the issues which are appropriate to consider at this point before entering into specific recommendations.

General Discussion

Although some of the above problems were put forward as direct statements, most were derived through discussion. Within these discussions, it became clear that there are matters which indirectly effect the topic of this total project. The complexity of intelligence assessment is reflected in some of these points.

It is important to inquire into other aspects of intelligence testing for the visually handicapped not under discussion at this conference. These tests designed for the visually handicapped must be viewed in terms of the effectiveness of other tools in the psychometric domain such as the Miller Analogy Test, college board scores, verbal WAIS scores, and for some purposes test performance on those tests used in the academic situation.

Further, it was particularly pointed out that in having a concept of "a vocational intelligence test" we ought to also bear in mind the concept of "an academic intelligence test" both of which should be important in planning for personal, social and career development of the individual client.

The relationship between intelligence tests and aptitude tests ought to be investigated.

Some participants questioned the need for special intelligence tests for the visually handicapped as opposed to the use of those verbal measures and other measures which are applicable to the blind from intelligence tests for the sighted. Others believed that there may be complications from the loss of visual sense which affect verbal learning

including particularly the effect of vision on concept development as related to the time of onset of visual disability and including variations in school experience with children and adults moving through the academic continuum, as well as the social and personal and medical trauma occasionally related to visual disability.

There is a tendency to use work experience which is not necessarily based on sound psychoeducational planning to make considerations about the future of the adventitiously blinded.

Some examiners and counselors may use test scores to avoid confrontation with the decisions which they must make.

An important suggestion was concerned with not placing too much reliance on the development of intelligence tests--with the belief that they will supplant all other data which is available in this general construct and will relieve us of the responsibility for meeting some other test development needs which could be confused with intelligence appraisal. For example, it was pointed out that there is a clear need for an appraisal of functional visual ability which stresses the client's visual assets and which must be included in the battery of tests upon which decisions are based before we can be sure that the battery with or without intelligence tests adapted from the sighted or specially constructed for the visually handicapped are of a given importance in the test battery. In other words, if the complete test battery of which the intelligence test is only one part is in fact an incomplete test battery then the relative importance of the intelligence tests score cannot be fully appraised.

To consider the construction, the modification, the limitation, or further development on these tests without considering what other types of tests must be available would be in error.

The difference between predictive tests and diagnostic tests was pointed out. The former, which assist the psychological examiner in anticipating future potential achievements of the individual might for that reason have bearing on his recommended occupational placement and educational planning. Diagnostic tests on the other hand are concerned with the identification of disabilities, weaknesses, problems and limitations which must be considered as momentary determinants of placement and planning.

The questions of "when" and "why" one does test intelligence were raised. The answer to this question seemed to vary with the professional background and experience of the respondent. Certainly the prime focus of the tests to which this conference addressed itself was a concern with tests administered to young and adult blind being considered for vocational and work placement. There is a reasonable and important addendum to this point of view which must be considered within the framework of long term planning for the visually handicapped. This consideration is that intelligence testing must be conducted early in the life of those congenitally or early blinded individuals who require advisement and counseling in the academic setting which precedes or concurs with early pre-vocational and vocational training. Obviously there are other factors such as the importance of intelligence tests in diagnostic batteries for personal and social adjustment therapies which should begin pre-vocationally.

The problem some psychological examiners face is learning the meaning of the test scores without training in the presence of experienced examiners, without sharing with other examiners and without documented anecdotal reports on the interpretation and effectiveness of interpretation of test scores. An important problem for the examiner is the frame of reference within which he uses the scores. If his primary testing practice is with the sighted he may view the scores peculiarly. If his primary testing situation is in the schools he may view the results differently from an individual whose prime testing focus is in vocational placement. In short the work setting of the psychologist or examiner influences the interpretation of the test scores and influences him greatly in the absence of limited information on the meaning of the tests. This may suggest that either specific training which is related to limited distribution, which is related to an extended type of anecdotal test manual and interpretation manual may be necessary to make these tests of maximum use.

The development of tests should be accompanied by a parallel development of "competence in testing". It was pointed out on more than one occasion during a conference that a test is only one instrument, one sample, one part of the total information gathering which precedes counseling, planning, placement, etc. For that reason it is probable that the maximum utilization of intelligence tests for the visually handicapped will not rest solely on the maximum refinement and development of such tests but will require a battery of parallel activities which includes training of psychological examiners,

continuing supplemental information circulated to examiners, a system for feedback to and from examiners, very long term validity studies and determining the long term outcome of diagnostic decisions and prognostic choices and how they eventually served a client.

Final Thought

It is important in gathering support for the development of these tests for the specific population that psychological examiners and professional be made aware of the other possible uses of these tests than direct service to the visually handicapped. Although it would certainly be adequate reason to develop tests to provide maximum service for the visually handicapped it is important for other professionals to know that these tests might be well adapted to provide important and useful information on tactile and motor behavior of sighted subjects under certain research conditions and then indeed we might explore some aspects of sensory deprivation, cognitive development, learning, etc. with carefully constructed tests such as these.

Conference Recommendations

The conference participants presented summaries of the meeting which were collated and are presented here. The recommendations fit three categories:

I. Specific suggestions for test modification and development

II. Long term planning and organization for maximal integration of test development, standardization and utilization

III. Immediate dissemination activities

Recommendation I: Test Modification and Development

It was suggested that perhaps the objectives of this conference ought to be not to recommend the improvement or development of a particular test but to recommend that these tests currently being considered and particularly those known verbal tests applied to both visually handicapped and normal seeing individuals, ought to be viewed as a potential battery of tests which could be applied as a total unit or in part and made available in that way to the tester.

It was suggested that either through the selection of especially trained psychological testers or through the establishment of a testing program related to direct client service that the tests under consideration here be given as a battery to a large population of blind and partially sighted subjects at an extended age range from early academic levels through adulthood and that comparison of the test scores be statistically handled through the establishment of a central data bank.

There are practical problems that need resolution early in planning for future developments in this field. Among them are the questions of whether or not we should work from the base of those tests currently available to develop modifications, extensions, and improvements of these tests or whether we should consider further efforts to expand and use intelligence tests for the sighted separately or as a part of the previous battery or whether since there are issues and problems concerned with present tests using them as a thought base only a totally new pattern of tests or a test battery should be developed.

Some items were generally agreed upon. First, tests ought to be extended to an earlier age level. Although not specifically identified, the early level should include development of tests in such a way that they are useful in educational planning which precedes vocational decision making and ultimately academic vocational training. It was also agreed that the tests should be standardized with respect to both blinded and visually handicapped subjects and that prior to data collection a careful identification of the parameters of the visual disability should be characterized for each subject so that sub-population data could be extracted and hopefully more meaningful use of the tests might emerge. Some of the sub-categories suggested were age of onset of blindness or visual handicap, degree of visual disability, type of visual disability, amount of education prior to and following visual loss, and concomitant psychological and physical and educational problems.

Research Time

The development and refinement of a test such as those presented and considered here is a long term process and to consider either the development of new tests or the refinement of these tests individually or on a group basis must take into account the planning, testing, data analysis, construction, and production times which are part of the total process.

Research Cost

A continuing theme recurred throughout the conference voiced first by the test developers and subsequently enlarged upon by those attending the conference, viz., the difficulties in acquiring the technical personnel and resources necessary to manufacture the tests in the limited

but commercial lots necessary and at the same time to consider the problem of the original cost involved in preparing the necessary plates, molds, etc. required in the production of tests in these limited quantities.

Testing Goals

Some consistency ought to be considered in the future with respect to planning for both the inclusion of blind and partially sighted subjects for establishing consistent criteria among experimenters on these variables so that inter-test comparisons can be made from accumulated data. It was pointed out that we must keep in mind the role of the tests in decision making. Test construction for its own sake can become a frustrating end unless it is carried out in such a way that the product of the test is data which contributes to the decision making process of the examiner. It is possible that data may be reliable and may be valid but may not be useful. It should be a test developer's foremost concern to be sure that the type of information upon which final data is founded is information which either as a total score or as subscores on specific categories of tests is useful in decision making either diagnostic or prognostic.

Multi-Useful Tests

No matter how carefully we plan in the construction of tests there will be some irreconcilable problems that may be difficult to manage. For example a given test score on a visually handicapped child may be needed to compare himself with himself over time. At the same time that test may be needed to compare that individual with other similarly visually handicapped individuals or other population of visually handicapped individuals who have a wide range of concomitant problems not

those of the subject and finally the test scores of the subject may be used to compare him with sighted subjects. For this reason it is extremely difficult to produce a test which can serve all masters.

Administration Time

It was pointed out that the time required to administer some of these current tests is extensive and that to consider administering a comprehensive battery of the tests would almost have to be undertaken in the framework of a research experiment since if done as a part of testing for client service only would undoubtedly require more time and more expense than the client or psychological examiner or the agency could legitimately offset without assistance.

Abstract Consideration

There are some abstract aspects of intelligence testing for the sighted that should not be overlooked in the current tests for the visually handicapped. That is, not all tests are given for entirely practical purposes. Tests have meaning for scientists concerned with human behavior, human vision, the sensory and perceptual behavior or function, and cognitive development. And tests which do not provide the scientists with accurate and useable information in a format which helps in theoretical planning or scientists in the philosophic understanding of human behavior and sensation and perception are lacking in a kind of richness which we ought not sacrifice for the development of only diagnostic or predictive tests without careful consideration of whether or not such other masters as science and philosophy can be served by the same tests with reasonable adaptation during construction.

Recommendation II: Long Term Planning

The following broader aspects of future planning were discussed and recommended.

Advisory Body

It was agreed at the conference that an advisory body is needed to organize, oversee, and assist in the management, development and continuing improvement of the tests in this conceptual area, having representation from a variety of interested parties so that all various goals are preserved. Certainly the body ought to know resources and concerns of federal funding agencies. It ought to be aware of the thrust of problems being formulated in professional associations serving the visually handicapped. It ought to be in touch with the activities of the academic research personnel. It ought to know the activities of major foundations serving the blind and should contain representatives of state and federal service agencies both in rehabilitation and education as well as having representatives of such special problems in test development as construction, product development, psychometrics, statistical and data treatment and of course psychological examiners.

National Coordination Center

The need for a national resource concerned with psychoeducational appraisal of the blind and visually handicapped ought to be considered. This was suggested partially in view of the impact of the national center for the deaf-blind and its coordinating efforts to unify and

centralize information on a national problem. The problem was particularly suggested because of those difficulties which arise when research and utilization is delegated to individuals whose own professional activities are diffuse, varied and whose career mobility affects the continuity of research. It was suggested that such a center might offset the problems of lost continuity and implement information retrieval systems and computer processing necessary for test construction. It might focus the energies of the most available and competent technical assistance staff for maximum use and economy. In addition it was pointed out that research conducted in the academic setting has not only the problems mentioned but also the additional problem of research conducted by students (whether or not for degrees) which often lacks continuity. These suggestions were made recognizing the tremendous importance of research which is carried on in the academic setting as indeed was the majority of this search upon which the present conference is based. The suggestion was not made as an exclusive idea but one as supplementary to current academic research. It was recognized that although there are problems in academic and student research there are tremendous advantages in involving the young professional in the research process both for his development as a service and a research worker in this professional area.

The problem of data retrieval was considered and the following concerns discussed. Once tests are placed in the market place they are utilized on an individual basis by psychological examiners who are not necessarily parallel trained. Although suggestions have been

made that training projects be undertaken on a regional basis which may improve this situation it was further pointed out that even with parallel training, data retrieval and data accumulation is not the primary purpose of the professional worker as he is now employed and that asking him to participate in such activities without a coordinated national effort might place him in conflict with his own client service activities and his own professional objectives and for this reason special consideration ought to be given to means for data collection on large populations either through supplementary or partial employment of recognized trained professional examiners or through a national data collection center concerned primarily with test development and not individual service.

Survey

It became clear during the conference that it would become necessary at some time to conduct a survey of agencies, resources, counselors, psychological examiners, and all possible units and persons who might be identified as a population of consumers to whom such tests would eventually flow as a finished product and who might participate either in extended training in the use of such tests or in the beginning as research centers in the data collection on such tests. It appears at the moment that a full and clear knowledge of practicing and qualified examiners is not available for the country in general or even for specific regions or sets of agencies nationally.

Workshops

It was recommended that regional workshops be conducted to acquaint professional psychologists, rehabilitation counselors and educators involved in administering and utilizing intelligence tests for the visually handicapped with the batteries of tests now available, with the limitations of the tests, with the special capabilities of each test, with the validity, reliability, and availability of each test.

It was particularly pointed out that such meetings ought to have demonstrations of the tests either live or through media presentation and that when possible representatives of this conference residing in the region of the meeting ought to be present to clarify the need for such meetings as identified in this current project. Certainly whenever possible authors of the tests themselves ought to be available at that conference as consultants as should those psychometrists most acquainted with the tests when used in an actual clinical setting.

Distribution Control

The question of control of psychological tests was raised. It is often true that psychological tests are sold or distributed only to those meeting certain qualifications. As for example, the certification by APA or membership in certain state licensing groups. The question was raised as to whether or not tests which are particularly constructed for a carefully defined population ought to have certain restrictions in their distributions so that either the data acquired in the course of service could be used in research or so that one could be sure that correct, accurate, and reasonable interpretations of data acquired during testing could be expected.

Transitional Activities and Conference Follow-Up

The conference recommended certain limited immediate actions which could be undertaken within the scope of the present project. They include, this report to bring to the attention of many of the current state of development of certain tests, problems and limitations which need planning and development and some immediate future plans.

Transitional Activities

Within the limited scope of resources available to the project staff four post-conference follow-up activities have been conducted. First, the preparation of a 16 mm black/white sound film demonstrating each component of each of the tests considered at the conference. Two copies of the film have been prepared and have been shown at major professional meetings since their completion. The films are available for interested researchers and clinicians who may wish to inspect the operational characteristics of the tests for research, clinical or teaching purposes.

Slide Presentation

A slide presentation depicting each component of the test kits along with sound synchronized audio slides describing the characteristics of the tests has been prepared and is available for similar research, clinical and teaching purposes.

Report

This report summarizing the conference and indicating the availability of the motion picture film and slide presentation has been prepared and disseminated as part of the conference follow-up activities.

Post-Conference Meeting

As a result of several recommendations made throughout the conference and particularly at the mandate of the conference participants a meeting was arranged with the research staff of the American Printing House for the Blind to discuss with them certain problems and recommended procedures for moving ahead to maximize test utilization in the future. This meeting was held September 23rd and 24th at the American Printing House for the Blind in Louisville, Kentucky, and was attended by representatives from the original project including Miss Mary Bauman, Mr. Carl Davis, Dr. Douglas McFarland, Dr. Deno Reed and the Project Director as well as Dr. Carson Nolan and Miss June Morris of the Printing House Research Staff.

The nature of this meeting was to determine the extent to which this established production, distribution, and research organization serving the visually handicapped could expedite the solution of some problems identified at the conference.

The results of this meeting were four recommendations which, sequentially carried out, would provide substantial closure on many of the problems raised at the research utilization conference. The four activities suggested were as follows:

1. Test Construction. The number of tests available for experimental and clinical use varies greatly across the tests considered at the conference. However, none of the tests are widely available in sufficient quantities for extended research or clinical usefulness at the present time. For that

reason the first objective for the future recommended at this meeting was that the American Printing House for the Blind act to secure the necessary funds for the accumulation and production of a sufficient set of each of the four appropriate tests (excluding the revision of the Raven's Tactile Progressive Matrices) and that this first step be undertaken as soon as satisfactory staff and support could be acquired.

2. Pilot Testing. The second phase in the furthering of test utilization is aimed at the reduction of duplicity of test function and some elementary comparison of the tests among themselves. The accomplishment of this second phase of suggestions from the follow-up meeting calls for the training of a group of professional examiners to administer these tests as a battery for research purposes and to present this data for systematic comparison and analysis by research project staff.

3. Test Modification. In order to further maximum usefulness of the tests it was suggested that as the tests are selectively inspected for further development and production it would be appropriate to inquire into such factors as types of visual disability, degree of visual disability, and age of the subject with the hope that extended standardization of the tests might spread the usefulness of the tests across a wider population of visually handicapped.

4. Validation. A final phase of the development of these tests, their production, and ultimate utilization would include a validation study of those tests selected and modified through the above procedure as most comprehensively useful on a visually handicapped population. Such a validation study would be a comprehensive undertaking requiring a substantial battery of trained testers, the development of remediated training procedures, the establishment of a data bank, and the acquisition of a research staff to handle and disseminate the data acquired during the validation study.

5. Dissemination and Training. At the conclusion of the four procedures identified above a widely usable examination validated over a variety of sub-sample populations within the area of the visually handicapped should be available for use along with training procedures for psychological examiners to become familiar with the use of the tests.

Production and distribution facilities should have been developed as part of the above undertakings.

Summary and Conclusion

This research utilization conference was initiated with the expectation that modest carefully directed plans for dissemination of information on certain intelligence tests developed with partial support of SRS could lead with some expediency into rapid improvement of the utilization of these tests by professional workers serving the visually handicapped.

It became clear early in the course of the meeting that the implementation of utilization would involve more than public awareness and would include the solution of more substantive problems such as test modification, inter-test comparison, further validity and reliability substantitation and relatively thorough training of professional test administration personnel.

It is the hope of the conference participants that by bringing these problems to light and setting into motion the process of organized administrative support for further comprehensive research dissemination and training programs that this objective of research utilization will ultimately be met at a highly professional level.

In the meantime the first steps at public dissemination of both information about the tests as they now exist and research needs in this area are made available with this report.

APPENDIX A

Conference Participants

APPENDIX A

Conference Participants
Research Utilization Conference on
Intelligence Tests for the
Adult Blind
Atlanta, Georgia
December 7, 8, 9, 1970

1. Dr. Robert Anderson, Department of Psychology, Texas Tech University, Lubbock, Texas 79409.

2. Mrs. Mary K. Bauman, Personnel Research Center, 1604 Spruce Street, Philadelphia, Pennsylvania 19103.

3. Dr. Marie Skodak Crissey, Consulting Psychologist, 6317 Morrish Road, Swartz Creek, Michigan 48473

4. Mr. Tandy Culpepper, Special Technical Facility, Alabama School for the Deaf and Blind, P.O. Drawer 17, Talladega, Alabama 35160.

5. Dr. W. Scott Curtis, Division for Exceptional Children, Aderhold Hall, University of Georgia, Athens, Georgia 30601

6. Mr. William Dauterman, 198 Wagner Drive, Claremont, California 91711

7. Mr. Carl Davis, Perkins School for the Blind, 175 N. Beacon Street, Watertown, Massachusetts 02172

8. Dr. Edward T. Donlon, Director, 43 South Broad Street, Norwich, New York 13815

9. Dr. Hilde Groth, Development and Research Consultant, American Foundation for Overseas Blind, Inc., Far East Regional Office, P.O. Box 2285 Kuala Lumpur, Malaysia

10. Mr. Gordon Haygood, Associate Regional Representative, RSA, Room 448, 50 Seventh Street, N.E., Department of Health, Education and Welfare, Atlanta, Georgia 30323

11. Zofja S. Jastrzembska, American Foundation for the Blind, 15 W. 16th Street, New York, New York 10011

12. Mr. Roy Kumpe, Executive Director, Arkansas Enterprises for the Blind, 2811 Fair Park Boulevard, Little Rock, Arkansas 72204

13. Dr. Douglas McFarland, Director, Office for the Blind and Visually Handicapped, Rehabilitation Services Administration, SRS/DHEW, 330 C Street, S.W., Washington, D.C. 20201

14. Dr. William Myers, Department of Special Education, 215 Sutton Hall, University of Texas, Austin, Texas 78712

15. Dr. John Pelosi, Child Advocacy Center, 3132 Roxboro Road, Durham, North Carolina 27704

16. Dr. Deno Reed, Social and Rehabilitation Service, Department of Health, Education and Welfare, Room 5320 HEW/S, Washington, D.C. 20201

17. Mr. Burt L. Risley, Executive Director, State Commission for the Blind, 800 City National Bank Building, P.O. Box 12866, Austin, Texas 78711

18. Dr. Philip Shurrager, Department of Psychology and Education, Illinois Institute of Technology, Chicago, Illinois

19. Dr. Murray Tillman, Educational Psychology, Aderhold Hall 325, University of Georgia, Athens, Georgia 30601

20. Mr. Charles Woodcock, Oregon State School for the Blind, 700 Church Street, S.E., Salem, Oregon

APPENDIX B

Test Identification Information

Test Identification Information

TITLE: Test Battery for use with the Blind
(Vocational Intelligence Scale for the Blind, or VISAB, Series)

PROJECT DIRECTORS: Joseph Tiffin and Robert J. Teare

GRANT NUMBER: RD-1094 1957-1964

PROJECT AIM: The research sought to determine traits of the legally blind related to vocational achievement and to build a set of tests to measure these traits.

DESCRIPTION: The battery consists of a six part test kit (six sub-tests) with manuals. Separate descriptions follow.

SUBTEST TITLE: The Tactual Reconstruction Pegboard (TRP)
(VISAB Battery)

DATE OF RESEARCH: December, 1957 - August, 1959

TEST DEVELOPER: Alin Gruber

PURPOSE: The TRP tests both tactual perceptiveness and manual dexterity, its premise being that ability of the blind to perceive tactual relationships provides an index of the extent to which--in the job setting--the client can use whatever hand coordination and manipulative abilities he possesses.

DESCRIPTION: The Pegboard and its associated materials are a self-contained unit enclosed in a formed plastic carrying-case. The pegboard is bonded to one half of the case; the pegs are stored in the other. Two sides of the pegboard and the parallel midline are defined by raised ridges. Each half of the board consists of a matrix of 13 rows and seven columns of uniform holes, which receive one-inch long pegs.

ADMINISTRATION: The speed with which the examinee can manipulate the pegs (transferring them one at a time from tray to pegboard, row by row) determines the Rate of Placement score. For the Reconstruction task, the examiner constructs a standard sequence of six geometric patterns on one half of the pegboard. Then the client, using vision and/or touch, determines how and where it is constructed, and reproduces it on the other half. For each reconstruction item, a combined time and accuracy score is obtained. Both scores can usually be obtained in 30 minutes.

STATISTICAL EXCERPTS: The internal consistency reliability of the scores on the test, based on an initial sample of N = 318, was computed using Hoyt's analysis of variance method. The obtained coefficient yielded a reliability coefficient of .93.

In determining concurrent validity, it was shown that the TRP mean scores did not differentiate strongly among three employment groups (competitive, workshop, unemployed). The scores demonstrated highest validity against criteria which reflect actual job performance within a manual production setting.

The Reconstruction task did differentiate between employment groups, showing a tendency for professionals to perform better than reconstruction workers ($p < .10$). Rate did not discriminate.

As vision of subjects decreased, the factor structure of the TRP changed systematically. Therefore, separate norms for High, Mid, and Low vision groups were generated.

SUBTEST TITLE: The Vocational Intelligence Scale for the Adult Blind (VISAB)

DATES OF RESEARCH: December, 1957 - August, 1959

TEST DEVELOPER: Walter R. Jones

PURPOSE: The VISAB is designed to measure non-verbal intelligence and to serve as an assessment aid in predicting vocational achievement within the framework of the rehabilitation process.

DESCRIPTION: The VISAB kit consists of a series of 13 panels constructed of flat black styrene plastic. The 13 x 13 inch panels are contained in a formed plastic carrying case. In addition to 13 practice items, there are 43 test items arranged in order of difficulty. The items are separated from each other by a raised horizontal strip. Four geometric forms, of which three share a common relationship, comprise each task.

ADMINISTRATION: The subject is asked to examine the four figures in each row, to discover the underlying relationship either visually or tactually, and to verbalize to the examiner which of the four alternatives does not fit the pattern. There is no time limit, and an average of 40 minutes is required to administer and score the test.

STATISTICAL EXCERPTS: The internal consistency reliability of the scale was obtained by means of Horst's modification of the Kuder-Richardson formula 20. It was based on the data from the final sampling of 311 individuals. The observed reliability of the scale was .91.

If VISAB is truly measuring some aspect of generalized intelligence, a strong positive correlation should exist between it and the WAIS, the criterion used for external analysis. The product-moment correlation between WAIS and VISAB based on data from 537 subjects is .63 (p .01).

SUBTEST TITLE: The Personal History Survey (PHS)--Form W
(VISAB Battery)

DATES OF RESEARCH: December, 1957 - August, 1959

TEST DEVELOPER: Robert H. Rhode

PURPOSE: The PHS provides a means of differential weighting of the biographical information of visually disabled individuals. Weights were chosen so as to maximize the prediction of vocational achievement within the framework of the rehabilitation process.

DESCRIPTION: This test is in a form similar to an application blank. It contains 33 items on client background. A scoring template and a Job Hierarchy Scale are included as supplements to the manual...

ADMINISTRATION: The PHS is completed by the counselor, obtaining information directly from the client. It is scored by use of a template. Administration requires approximately 15 minutes.

STATISTICAL EXCERPTS: Only 3 of the test terms' alternative responses differentiated (p .05) between a sample of "high" and "low" achievers on the scaled continuum of vocational success.

A product-moment correlation was computed between 233 PHS scores and the Job Hierarchy scores of the cross validation group. The obtained r=.55 indicated a strong (p .01) relationship between the two variables.

Although correlation between PHS Scores and Job Hierarchy Score was relatively high, the standard error of estimate was computed at 8.76, meaning that 67 times out of 100 the actual score would fall within plus or minus one standard error of that value actually obtained.

COMMENTS: Use of the weighted biographical data will prove to be of value to the counselor, according to manual authors Teare and Rhode, if in any setting in which the PHS scoring system is applied, the same relationship on which the given data are based has been demonstrated to be in existence. Thus, it is considered extremely important for those persons who use the system to carry out local validity studies. Modification in item weight or alterations in survey content may be required.

SUBTEST TITLE: The Diagnostic Interview (VISAB Battery)

TEST DEVELOPER: May Husni Palacios

PURPOSE: The Diagnostic Interview was developed to provide a standardized interview technique for use with the total sample of 625. Replies to the questions were used to derive certain indices of adjustment.

The Diagnostic Interview was constructed to provide a structured and standard interview method to be used with blind adults.

DESCRIPTION: Sixty-eight open ended questions are provided. An extensive Interview Manual of 100 pages includes the questions and scoring samples.

ADMINISTRATION: Questions are read to the client, and replies are recorded verbatim. The replies are grouped as to eight adjustment continua: (1) Perception of blindness, (2) Health--hypochondriasis, (3) Religious dependency, (4) Dealing with tension, (5) Travel mobility, (6) Family adjustment, (7) Employment potential, and (8) Interpersonal relationships.

For scoring purposes, responses for seven of the areas are categorized and weighed. An adjustment/maladjustment classification is derived for each continuum, and totals from each of the continua may be summed into a grand total.

STATISTICAL EXCERPTS: Two psychology graduate students scored ten complete protocols, and analysis of variance was used to compute the reliability coefficients for each of the seven continua. Coefficients ranged from .75 to .91, considered sufficiently high to insure objectivity of the scoring scheme.

SUBTEST TITLE: The Sentence Completion Test (VISAB Battery)

DATES OF RESEARCH: December, 1957 - August, 1959

TEST DEVELOPER: Robert J. Teare

PURPOSE: The major theme of the Sentence Completion Test (SC) is the analysis of the way in which individuals who are visually disabled verbalize their reactions and approaches to a standardized set of conflict situations.

DESCRIPTION: A set of 43 unfinished sentences presents dilemma or conflict situations from daily life. Following are the content categories into which the stems have been divided: 1) Peer Relationships--4 stems, 2) Environmental Interactions--9 stems, 3) Authority Figures--10 stems, 4) Family Relationships--7 stems, 5) Heterosexual Interactions--6 stems, 6) Relationships with Friends--6 stems.

ADMINISTRATION: Each sentence stem is presented orally in a set order, and in completing them in ways that seem appropriate to him, the respondent may tell what he would do, how he would feel, or what he would think. All responses are recorded verbatim and are scored by classification into seven categories (Positive Reconciliation, Dominant-Autistic, Hostile, Internalized Introjective, Submissive, Non-active-Withdrawal, Avoidance), describing method of approach to conflict, rather than adequacy of response to it. The test typically takes 30 minutes.

STATISTICAL EXCERPTS: To determine scoring reliability responses of a random sample of 50 protocols were analyzed. Average agreement among three pairs of judges (see manual) was 84.5.

Assessment of concurrent validity was undertaken in terms of Employment Location and Job Hierarchy. The significant ($p < .01$) main effect of "Location" (Competitive, Agency, Workshop, Vending, Unemployed) indicated that the various employment groups did perform differently on the instrument as a whole. Correlation analyses between "Job Hierarchy" (31 occupational groupings) and test scores revealed that no one scoring category was particularly sensitive in predicting vocational achievement level of employed subjects. However, intercorrelation data revealed little overlap among the categories themselves.

The author indicates that the data gathered thus far on the instrument offer strong indications of its reliability and validity, although it is acknolwedged that more work needs to be done with the test.

SUBTEST TITLE: The Sound Test, An Auditory Projective Technique (VISAB Battery)

TEST DEVELOPER: May Husni Palacios

PURPOSE: This Auditory Projective Technique allows for the assessment of the effect of perception of human and mechanical sounds upon personality dynamics for the purpose of predicting vocational achievement.

DESCRIPTION: A standard series of 15 sound segments, each lasting from 20 to 50 seconds, comprises the test. Varying interactions between sounds of everyday life are presented in a pre-set sequence on a 33 1/3 LP record. A manual accompanies the test.

ADMINISTRATION: After each sound the listener is asked to describe what it brings to mind and what story it suggests to him. Responses are recorded verbatim. In organizing and interpreting these auditory cues, the client is presumed to impose his own values and needs on them. Scoring categories similar in part to those of the Rorschach and T.A.T. systems are used and include the following elements: Units of Thought, Concept Formation, Parts of Sound Responded To, Integration, and Identification. It takes approximately 30 minutes to administer the entire test.

STATISTICAL EXCERPTS: To test reliability of scoring categories, four judges scored complete protocols. A reliability coefficient of .83 was obtained. The author also rescored 20 randomly selected protocols three weeks after the first scoring, obtaining the reliability correlation coefficient of .93.

Three criteria were used to establish the validity of the Sound Test as a predictor of vocational achievement:

1. Job Hierarchy--Correlations with Units of Thought and Integration were significant beyond the .01 level.
2. Employment Groups (Competitive, Shop and vending, Agency, Unemployed) All categories except Concept Formation differentiated significantly among the groups.
3. Intelligence--A correlation of .405 was obtained between the WAIS verbal score and Units of Thought, sufficiently high to indicate a positive relationship.

Test Identification Information

TITLE: A Haptic Intelligence Scale for Adult Blind

PROJECT DIRECTOR: Harriet Shurrager

GRANT NUMBER: RD-282 (1958) and RD-1412 (1964)

PROJECT AIM: The purpose of the project was to develop and standardize a performance scale for adult blind which would measure abilities not adequately assessed either by verbal tests of intelligence or existing performance tests designed or adapted for the blind. Used in conjunction with a verbal test of intelligence, it would contribute to a more comprehensive evaluation of the intelligence of blind persons than it has previously been possible to obtain.

DESCRIPTION AND ADMINISTRATION: The "Haptic Intelligence Scale" (HIS) consists of six tests. Digit Symbol, Block Design, Object Assembly, and Object Completion were designed in attempt to adapt tests of the WAIS Performance Scale for Blind subjects. The Pattern Board and Bead Arithmetic are not adaptations of the WAIS tests. There are no norms for the partially sighted, and the exercise of useful vision invalidates norms established with the totally blind. At the discretion of a trained examiner who has had considerable experience with the performance of totally blind subjects, the partially sighted subjects may be blindfolded for the test and his scores compared with the established norms.

Materials for all subtests are contained in a plastic carrying case.

1. DIGIT SYMBOL consists of a plastic plate embossed with simple geometric forms. A column down one side of the place includes one sample of each of the six forms used. Raised dots (not braille) superimposed on each sample form indicate a number with which that form is to be associated. Forty forms arranged in eight rows of five have no dots on their surfaces. Subject is to identify these forms by the appropriate numbers, referring at will to the samples. The plate is divided between the key column and the test items, so that the two parts of the plate can be interchanged; thus, each subject can explore the test items with his preferred hand, using his nonpreferred hand to check the key column. Forty items--Time limit 2 minutes.

2. OBJECT ASSEMBLY consists of a block, doll, hand, and ball, each of which is dissected into several pieces. Objects are to be assembled by putting the pieces together. Four items--Time limit 20 minutes.

3. BLOCK DESIGN consists of four 1 1/2 inch cubes, each of which has two smooth sides (formica, two rough sides (rubber treading), and two sides diagonally bisected into half rough, half smooth. The four blocks are to be arranged to form patterns identical to those appearing on plates prepared from the same material. Seven items--Time limit 21 minutes.

4. OBJECT COMPLETION consists of sixteen familiar objects from which one important part has been removed (e.g., comb with a missing tooth). Subject identifies missing part. Fourteen items--Time limit 14 minutes.

(Haptic Intelligence Scale for Adult Blind - continued)

5. PATTERN BOARD consists of a 7 1/2 inch square board with 25 round holes, half an inch in diameter, arranged in rows of five. Pegs can be inserted in the holes to form patterns. A fixed peg in the center hole serves as a reference point. Subject examines a pattern with his fingers and then seeks to reproduce it after pegs are withdrawn. Nine items--Time limit 18 minutes.

6. BEAD ARITHMETIC consists of an abacus, 10 x 11 inches, with one broad horizontal divider. Five spokes are set in the frame, each with five large beads below the divider and two above. Level of difficulty of items differs from reading one-digit numbers entered by the tester to solving addition problems entered by the subject. Fourteen items--Time limit 15 minutes.

Test time (including instruction) can possibly run close to two hours. In practice this very rarely happens, for subjects either achieve a solution (not necessarily correct) or give up in less than the time limit on most items. Testing is discontinued after a certain number of consecutive failures on each test.

STATISTICAL EXCERPTS: Correlation of HIS Total Score with WAIS Verbal Score, computed form scores of 399 subjects aged 20-34 was .65, indicating in general terms that forty-two percent of the variance in the two scales is attributable to factors common to both.

Intercorrelations of the HIS tests are high, ranging from .53 to .71. Their correlations with HIS total score range from .69 to .82, suggesting that a common factor is involved to a large extent in all tests of the scale.

The Odd-even reliability of the HIS was found to be .95. Test-retest reliability was .91.

Test Identification Information

TITLE: Stanford-Kohs Block Design Test for the Blind

PROJECT DIRECTOR: William L. Dauterman

PRINCIPAL INVESTIGATOR: Richard M. Suinn

GRANT NUMBER: RD-1625 September, 1964 - August, 1966

PROJECT AIM: During the two years of the project, literature on performance tests for the blind was reviewed, the Ohwaki-Kohs Tactile Block Design Intelligence Test for the Blind was extensively administered to American subjects, and results were analyzed. The test apparatus was redesigned, and data were collected on 425 subjects. The "Manual for the Stanford-Kohs Block Design Test for the Blind" was then prepared.

DESCRIPTION: The Stanford-Kohs Test is essentially a performance test of intelligence for use with adult blind clients who meet the requirements of legal blindness. Twenty test designs are assembled in booklet form. The designs are embossed on Brailon plastic sheets with a two-color, two-texture effect. Sixteen durable blocks are made of rough and smooth surfaces to correspond to the colors and textures of the booklet designs.

ADMINISTRATION: Any administration of the test must conform precisely to the direction and methods outlined in the Manual. After examination of the blocks, the subject examines the design in the booklet and reproduces it with the blocks. Time limits are different for the partially sighted (P.S.) and the functionally blind (F.B.) Testing is discontinued after any two consecutive failures either due to incorrect assemblies or through exceeding the time limits. Scores as recorded on the Record Form may be compared with mean or median performances, converted to percentile scores, compared with expectancy data or converted to I.Q. equivalents.

NORMS: Validity data were based on construct and concurrent validity methods. Regarding the former, results showed the expected increments in test scores up to age 34, followed by a rapid decrement. Regarding the latter, statistically signficant correlations were found between test results and scores on other intelligence tests (for all subjects, $p < .001$ when compared to WAIS and total years of education).

Reliability was satisfactorily demonstrated on 50 subjects with a mean time lapse of two and one-half months between tests: $r = .86$ for all subjects.

Significant differences on test performances were found as a function of ethnic background or amount of remaining vision.

Test Identification Information

TITLE: Raven Progressive Matrices for Presentation to the Blind

(Tactual Progressive Matrices, TPM)

PROJECT DIRECTOR: Robert P. Anderson

GRANT NUMBER: RD-670 February 1, 1960 - January 31, 1964

PROJECT AIM: The Progressive Matrices were developed by Raven to serve as a non-verbal measure of intellectual abilities over a wide range of capabilities without presupposing skill or a given level of education. The adaptation for the blind sought: 1) to develop tactual representations of the Raven Progressive Matrices, 2) to explore the reliability and validity of the tactual scales for selected populations of blind adults and children, and 3) to revise the scales as needed after the initial sample testing.

DESCRIPTION: The basic Adult Tactual Raven is composed of 50 items. The construction of each item corresponds closely to Raven's items in the printed form of the test. The raised tactual designs of each matrix are constructed by hand of balsa wood, cardboard and wire. The designs are constructed on heavy illustration board. The items in the adult form are arranged in sets A, B, C, D, and E. After item analysis, a 25 item test (Raven 25) was tested on a small population of subjects.

ADMINISTRATION: From 8 possible design inserts, the subject is instructed to select the correct pattern piece to complete the progression in the matrix. The mean time necessary to administer the test during the project was 40 minutes with a range of total time, from 15 to 105 minutes.

AGE RANGE: The TPM can be used to test intellectual capacity of S's 9-15 years of age (Children's set: A, Ab, B). The 25 items short form can be used to measure intellectual capacity of adults. The test appears to have limited usefulness for retarded adults and adolescents.

STATISTICAL EXCERPTS: Both versions of the test show modest to moderate concurrent validity with the verbal scale for the WISC and WAIS. In a preliminary analysis carried out on the 50 item set, N-80, the Kuder-Richardson reliability coefficient was .93. Split-half reliability corrected by the Spearman-Brown formula was .95. The WAIS verbal and IQ Scale scores were used as criterion measures. Both correlated .49 with the 50 item set. The tests are related positively to external criteria, e.g., grades, occupational level, educational attainment, but not at the level of the Wechsler verbal scales.

COMMENT: The further development of the test is contingent upon finding an economical method of reproducing the Matrices in plastic in order to withstand continuous clinical useage.